Tolas Mobile Home Park

Water Conservation Plan

January 26, 2010

Prepared for:

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Introduction

The water supply in Nevada is a precious commodity and plays an important role in determining Nevada's future. Nevada is the one of the driest states in the nation as well as one of the fastest growing ones. Nevada's future, both from an economic and a quality of life view, depends heavily upon the wise management of the water supply.

Groundwater, in general, provides about 40 percent of the total water supply used in Nevada. In some areas, groundwater provides the entire water supply. Groundwater usage may vary considerably from year-to-year as it is sometimes pumped to supplement surface water sources.

Water use in Nevada can be classified as:

- Domestic (household, both indoor and outdoor) – Met by public supply or private supply (e.g. wells).
- Commercial (businesses) – Met by public supply or private supply (e.g. non-community systems).
- Industrial (manufacturing/construction) – Met by public supply or private supply (e.g. non-community systems).
- Thermoelectric (electric/fossil fuel/geothermal power generation) – Met by public supply in a minor fraction.
- Mining (mining processes) – Supply source varies widely from operation to operation and is dependent upon the mineral being recovered and the recovery process employed.
- Irrigation (land use) – Met by self-supplied or supplied by irrigation companies or districts.
- Livestock (farm needs) – Supply source varies.

While all classifications of water usages have shown an increase over the years, it has historically been irrigation water use which has accounted for the majority of the water use in Nevada.

It has been estimated that the domestic water use accounts for less than 15 percent of the water used in Nevada, but this is expected to rise to nearly 25 percent as the population increases (based upon existing water use patterns and conservation measures). It is expected that Nevada's population will become increasingly concentrated in its primary urban areas of Las Vegas (Clark County), Reno/Sparks (Washoe County) and Carson City, with varied spillover effects on neighboring counties.

It is vitally important that all residents understand the fundamental science of water, how it is managed in the state, and the issues affecting its management. Water education must become a priority and must include education of children as they are our future.

Because Nevada does not have a comprehensive state-wide conservation program, it is reliant

upon the individual water suppliers for developing their own conservation programs. In 1991, Nevada enacted a law requiring adoption of conservations plans by water suppliers. Minimum standards for plumbing fixtures were adopted in 1991 (Assembly Bill 359) by Nevada and in 1992 minimum flow standards for plumbing fixtures were adopted by the federal government (National Energy and Policy Conservation Act).

Conservation is an essential part of ensuring adequate water supply as it is no longer feasible to develop new sources. It has proven to be a cost-effective way to reduce demands and/or to extend a given water supply. It can easily be pursued by all water users regardless of the water system type. Key to evaluating the program's effectiveness is the water use measurement (through meters and other measurement devices). Various conservation measures can be put into place and the achievement of the goals set with these measures is vital to combating the expected increase in water usage.

Statutory Requirements

This water conservation plan was prepared for the Tolas Mobile Home Park in accordance with Nevada Revised Statue (NRS) 540. As outlined in NRS 540.141, the provisions of this plan must include:

a. Public Education
b. Conservation Measures
c. Water Management
d. Contingency Plan
e. Schedule
f. Evaluation Measurements
g. Conservation Estimates

In addition to the provisions of the water conservation plan, listed above, NRS 540.141 also requires a rate analysis to be performed and included with the submittal.

This plan is being submitted to the Nevada Department of Conservation and Natural Resources (DCNR), Division of Water Resources (DWR) for review and approval prior to its adoption by the Tolas Mobile Home Park, as required by NRS 540.131.

This plan is available for inspection during normal business hours at 4139 Pelican Drive, Fallon, NV 89406. And, once approved by DWR, will be hand delivered to each tenant.

This plan will conform to all public notice requirements as found in NRS 540 and NRS 118b.

The original Water Conservation Plan for the Tolas Mobile Home Park was developed on December 18, 2007, and is being modified with this conservation plan.

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, January 26, 2015.

System Description

The Tolas Mobile Home Park is a privately-owned combined residential community water system and has a current water operation permit, NV0000061. The Tolas Mobile Home Park provides water to 30 mobile home space customers (unmetered) in its service area of Fallon, which is located in Churchill County. The service area street boundaries are South Maine and Tolas Road and covers approximately five square acres. The service area's terrain is flat.

The estimated population served in 2009 was between 100 to 120 individuals. The Tolas Mobile Home Park estimates that its customer base will not increase because the park is built-out. The State of Nevada, through its State Water Plan, estimates the population growth for Churchill County through 2020 to be 2.28% annually.

The water supply is groundwater from the Carson Desert Basin. Currently there is a total of one well supplying the system (28 feet deep, produces about 25 g.p.m.) and a total of two hydro-pneumatic tanks (each 120 gallons). There are no storage tanks.

In response to higher than normal Arsenic levels in existing wells, a shared community well will be put in place and become used and useful in mid-2010. This well will be shared between the Tolas Mobile Home Park, South Maine Mobile Home Park, and Deluxe Mobile Home Park. The existing well for the Tolas Mobile Home Park will be abandoned once the new community well is placed in service.

The Tolas Mobile Home Park has been granted water rights, subject to proof of beneficial use, for its existing well, in the total amount not to exceed 4.48 AF per year (through Application 73739). A secondary application (79066) has been filed to modify the point of diversion to the community well (the location of the well has not yet been established). The current water rights are listed in the table below (Table 1).

Table 1 – Water Rights

Application No.	Well No. & Name	Rate of Diversion	Annual Use
73739	**Existing well**	**0.05 c.f.s.**	**1.46 Mgal**
79066	**Community well**	**(transfer from 73739)**	**(transfer from 73739)**

Water is pumped into storage tanks and then chlorinated at the storage tanks. Water is then distributed to the customers through 2-inch PVC (Schedule 40) mains.

The Tolas Mobile Home Park requires, at a minimum, a Grade 1 operator. Currently, water management and operations are contracted out to SPB Utility Services, Inc. of Reno, Nevada. SPB Utility Services, Inc. is a technical support company specializing in water and wastewater plant consultation, management and operations, including the endorsement to install and repair backflow prevention assemblies.

The plant operator is required to perform monthly, quarterly, and yearly monitoring and testing of water quality. The Tolas Mobile Home Park does not have any outstanding water quality issues. Although water quality testing is compliant, the Tolas Mobile Home Park is experiencing higher than normal levels of arsenic.

The last sanitary survey performed by the Nevada Department of Environmental Protection (NDEP) was completed on August 28, 2008, and showed nine deficiencies were found with the system. These deficiencies included:

1. SRC WL Vent Pipe Height and Screen: The well casing is not equipped with a vent pipe, pipe height is not adequate, properly oriented or screened.
2. SRC WL Disinfection Required: Disinfection is required due to well construction or location.
3. SRC WL Contaminant Sources in Capture Zone; there are new contaminant sources or unplugged abandoned wells in the well source water protection area.
4. Emergency Response and Recovery Plan, Cross Connection Control Plan, and Operation and Maintenance Plan: The system does not have current plans in place.
5. Water Rights: The system does not have sufficient groundwater water rights.
6. Redundant Capacity: The system is supplied by a single source with no redundant capacity.
7. Disinfection By-Products Samples and Reporting: The system is not collecting the required disinfection by-product samples by an approved plan and/or properly reporting the results to the BSDW.
8. IOC Samples and Reporting and SOC and VOC Sampling: The system is not collecting the required samples and/or is not properly reporting the results to the BSDW.
9. MCL Exceeded Primary or Secondary: The maximum contaminant levels for primary or secondary drinking water contaminants were exceeded and not reported to the BSDW.

All deficiencies except #1, #3, and #4 have been resolved. Issues #1 and #3 will be resolved when the new community well is placed in service. The Tolas Mobile Home Park will be working with NvRWA to resolve Issue #4.

The Tolas Mobile Home Park does not currently meter individual spaces for water use. A flat rate monthly space rental charge is assessed for all mobile home spaces; this rate includes water,

garbage, and sewer. The Tolas Mobile Home Park does bill individual spaces for electricity use, as allowed by Nevada statues. Each space contracts individually with gas and cable providers and is responsible for payment to each provider.

Wastewater collected from the service area is treated on-site. There are no plans for reusing water.

Current water rates were established in 2006, when the park was purchased by the current owners. Rates have not been adjusted and there are no plans for adjustments in the near future.

Plan Provisions

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, January 26, 2015.

The Tolas Mobile Home Park owners will oversee the conservation efforts and will be responsible for implementation of conservation programs, monitoring of water use, and will review/revise the conservation plan when needed.

In an effort to promote voluntary conservation and aid in Nevada's future, the Tolas Mobile Home Park will enact the voluntary conservation measures found in the ***Conservation Measures*** section. When more stringent measures are needed, the Tolas Mobile Home Park will enact the measures found in the ***Contingency Measures*** section. All measures can be found in Appendix A.

As required by NRS 540.141, the water conservation plan must include the following provisions:

a. Public Education
b. Conservation Measures
c. Water Management
d. Contingency Plan
e. Schedule
f. Evaluation Measures
g. Conservation Estimates

Each provision is discussed below.

Public Education

Public education is a key for cooperation with conservation efforts, so funding for public education is crucial. The Tolas Mobile Home Park recognizes this and already has in place a

conservation education program and, if economically feasible, will establish a corresponding budget.

It is the goal of the Tolas Mobile Home Park to increase public awareness to conserve water, encourage reduction in lawn sizes, encourage the use of climate-appropriate plants, encourage the use of drip irrigation, and encourage conscious decisions for water use.

The conservation education program includes education materials such as bill inserts, pamphlets, flyers, and posters. New customers can be provided these materials when service is established, while existing customers can receive these materials periodically. Materials will also be posted in the common area of the park for all customers to review. Educational pamphlets will be provided to all customers upon request and should include an explanation of all costs involved in supplying drinking water and demonstrate how the water conservation practices will provide water users with long-term savings. Education materials should also encourage reduction of lawn sizes, use of drip irrigation, use of climate-appropriate plants, and conservation tips and techniques (see Appendix B).

Conservation Measures

In an effort to promote conservation and voluntarily conserve water, the Tolas Mobile Home Park is adopting water-use regulations to promote water conservation during non-emergency situations. These regulations include the following non-essential water use:

1) Use of water through any connection when the Tolas Mobile Home Park has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
3) Use of water for washing cars.
4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
5) Use of water for more than minimal landscaping in connection with any new construction.
6) Use of water for outside plants, lawn, landscape, and turf areas with even numbered addresses watering on Wednesday and Saturday and odd numbered addresses watering on Thursday and Sunday. Watering of plants, lawn, landscape, and turf areas are prohibited between the hours of 10 a.m. and 6 p.m. and on Monday, Tuesday, and Friday.
7) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.

In the event these conservation measures are insufficient to control the water shortage, the Tolas Mobile Home Park may wish to implement the mandatory measures discussed in the ***Contingency Plan*** section below.

The Tolas Mobile Home Park also promotes the development of water conserving principles into the planning, development, and management of new landscape projects. Customers are encouraged to consult with the local nursery or perform an internet search on the availability of water conservation plants and how to renovate existing landscapes. Customers are also encouraged to evaluate irrigation management systems using metering, timing, and water sensing devices.

At present, it is not viable for the Tolas Mobile Home Park to offer financial incentives for water conservation to individual customers. Instead, the Tolas Mobile Home Park has taken the initiative to repair or replace defective plumbing within the mobile homes that are in the park. By its own initiative it is setting a good example and creating a good-will incentive.

Water Management

The Tolas Mobile Home Park monitors and records water levels at its well and tank site. The system is designed such that the water level in the storage tank is adjusted automatically when the tank's pressure reaches a particular set-point (on at 40 psi and off at 60 psi).

Working relationships with other local water purveyors are maintained to ensure adequate water supplies are available. The Tolas Mobile Home Park is able to obtain water, in case of an emergency, through the City of Fallon's fire hydrants. There are plans for a community well to be shared between the two other adjacent mobile home parks, as discussed earlier.

The Tolas Mobile Home Park does not monitor unaccounted for water losses because customers are not metered and there is no comparison to be made between production and customer usage. The Tolas Mobile Home Park is planning to install individual water meters on each of the mobile home spaces in the next several years, as finances permit, to allow it to monitor production verses usage figures.

The Tolas Mobile Home Park does not have a formal leak detection program. The Tolas Mobile Home Park, however, does monitor its production meter several times a week and investigates unusually high usage to eliminate the possibility of system leaks. All leaks are repaired immediately upon discovery.

The Tolas Mobile Home Park does not have a formal well head protection program. However, the well is maintained in a secured area (fenced and locked area).

The Tolas Mobile Home Park is evaluating a capital improvement plan which can be funded through rates. It is estimated to be finalized and completed within 5 years.

The Tolas Mobile Home Park does not have a system for reusing of effluent.

The County of Churchill has adopted a Plumbing Water Conservation Ordinance which applies to structures which are renovated as well as all new construction. This ordinance is furnished to local suppliers and contractors. The Churchill County Building Department checks new construction, renovation, and expansions within the County limits to ensure compliance with this ordinance.

Contingency Plan

The objective of the contingency plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions in order to ensure an adequate supply of water to meet essential needs.

The Tolas Mobile Home Park plans for drought response would be three (3) stages of drought response: (1) warning stage, (2) alert stage, and (3) emergency stage. The stages are described as follows:

In Stage 1, the warning stage, the Tolas Mobile Home Park would increase monitoring of its water supplies and would begin creating public awareness of the water supply situation and the need to conserve. Conservation measures at this stage would be voluntary. Retrofit kits (low-flow faucet aerators, low-flow showerheads, leak detection tables, and replacement flapper valves) can be made available, or at cost, and can be actively distributed, if needed.

In Stage 2, the alert stage, the Tolas Mobile Home Park would call for wide-based community support to achieve conservation, implement water use restrictions, and impose penalties for ignoring the restrictions. Conservation measures at this stage would be mandatory and violations would incur fines.

In Stage 3, the emergency stage, the Tolas Mobile Home Park would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, and impose higher fees for water usage. Media relations would be activated in order to inform the customers and monetary assistance may need to be secured in an effort to mitigate the effects of the drought (e.g. federal funding assistance). Conservation measures at this stage would be mandatory and violations would incur fines, including possibly higher space rents.

When a drought is declared over, voluntary conservation measures (see ***Conservation Measures*** section) will be reinstated and water supplies would continue to be monitored.

Schedule

All of the provisions listed will be in place after the conservation plan has been approved.

Evaluation Measurements

Because individual spaces are not currently metered, it is impossible to determine the effectiveness of each plan element on an individual customer basis. However, the Tolas Mobile Home Park can evaluate the effectiveness of each plan element from the perspective of the whole mobile home park. In that regard, as a plan element is activated (e.g. mailing literature or declaring a drought stage), production figures will be compared to same-month historical data to estimate the plan element's effectiveness. This information will be utilized as a basis for any future water conservation plan revision and plan elements.

If there is a decrease in production as a result of a particular measure/incentive, that measure/incentive can be expanded or improved upon, if possible. If it is discovered that a particular measure/incentive is ineffective, it will be discontinued and a new one can then be implemented to take its place.

Conservation Estimates

While it is estimated that metering alone could be the major driver of conservation, by raising awareness of individual account use, the Tolas Mobile Home Park is taking the initiative to install individual water meters on each of the mobile home spaces (in the next several years, finances permitting). Once this is completed, and usage data has been collected for a one year period allowing for individual account usage awareness, the Tolas Mobile Home Park estimates a 10% reduction in water usage due to metering alone.

During the Stage 1 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 5 to 10% reduction in water use.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 10 to 15% reduction in water use.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 15 to 30% reduction in water use.

The estimated water savings for various end-user efforts can be found in Appendix C.

Rate Analysis

The charging of variable rates for the use of water has sometimes been shown to encourage conservation of water, but not in all systems. Oftentimes the end-user will continue to pay increasing block rates out of necessity for the water used. The use of variable water rates needs to be evaluated on a case-by-case basis.

At this time, the Tolas Mobile Home Park does not have the means necessary to charge variable rates for its individual customers. Instead, the Tolas Mobile Home Park will continue to monitor production amounts and will proceed with the meter installation plans discussed earlier. The issue of variable rates will be re-visited after the meter installations are completed and usage data has been collected. If so warranted, a change in rates will occur and this conservation plan will be updated to reflect the new rates.

Appendices

APPENDIX A
CONSERVATION MEASURES

Stage 1 – Warning Stage

1. The Tolas Mobile Home Park would increase monitoring of water supplies.
2. The Tolas Mobile Home Park would begin creating public awareness of the water supply situation and the need to conserve.
3. The Tolas Mobile Home Park would inform customers of voluntary conservation measures (non-essential water uses, listed below).
4. The Tolas Mobile Home Park would provide customers with retrofit kits either at cost or free.

Non-essential water uses are:

1) Use of water through any connection when the Tolas Mobile Home Park has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
3) Use of water for washing cars.
4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
5) Use of water for more than minimal landscaping in connection with any new construction.
6) Use of water for outside plants, lawn, landscape, and turf areas with even numbered addresses watering on Wednesday and Saturday and odd numbered addresses watering on Thursday and Sunday. Watering of plants, lawn, landscape, and turf areas are prohibited between the hours of 10 a.m. and 6 p.m. and on Monday, Tuesday, and Friday.
7) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.

Stage 2 – Alert Stage

1. The Tolas Mobile Home Park would set conservation goals and call for wide-based community support to achieve those goals.
2. The Tolas Mobile Home Park would inform customers of mandatory conservation measures (non-essential water uses, listed in Stage 1 are now mandatory).
3. The Tolas Mobile Home Park would inform customers of penalties if mandatory conservation measures are not observed (penalties are listed below).
4. The Tolas Mobile Home Park would inform customers of mandatory conservation water fees.
5. The Tolas Mobile Home Park limit the use of fire hydrants to fire protection uses only.
6. The Tolas Mobile Home Park would provide customers with retrofit kits either at cost or for free.

Penalties for violation of mandatory conservation measures are:

1st violation – written warning.
2nd violation – $25.00
3rd violation – $50.00
4th violation and subsequent violations – $100.00

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular space rental charges.

Once individual meters are installed, a flow restrictor can be installed if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 90 gallons per capita per day. The flow restrictor may be removed only by the Tolas Mobile Home Park, only after a 30-day period has elapsed, and only upon payment of the appropriate removal charge of:

Connection Size	**Removal Charge**
5/8-inch to 1-inch	$25.00

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

Stage 2 water rates would include an additional monthly water usage fee of $25.00, or other such fee as deemed necessary.

Stage 3 – Emergency Stage

1. The Tolas Mobile Home Park would declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. The Tolas Mobile Home Park would set rationing benchmarks (after metering is completed).
3. The Tolas Mobile Home Park would inform customers of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
4. The Tolas Mobile Home Park would inform customers of penalties if prohibited measures are not observed (penalties are listed below).
5. The Tolas Mobile Home Park would inform customers of rationing water fees (after metering is completed).
6. The Tolas Mobile Home Park would limit the use of fire hydrants to fire protection uses only.
7. The Tolas Mobile Home Park would provide customers with retrofit kits either at cost or free.
8. The Tolas Mobile Home Park would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

Penalties for violation of prohibited water use measures are:

1st violation – written warning.
2nd violation – $100.00
3rd violation – turn-off of water services.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Once individual meters are installed, a flow restrictor can be installed if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 90 gallons per capita per day. The flow restrictor may be removed only by the Tolas Mobile Home Park, only after a 30-day period has elapsed and only upon payment of the appropriate removal charge of:

Connection Size	**Removal Charge**
5/8-inch to 1-inch	$25.00

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

If any customer seeks a variance from the provisions of Stage 3, then that customer shall notify the Tolas Mobile Home Park in writing, explaining in detail the reason for such a variation. The Tolas Mobile Home Park **s**hall respond to each request.

Stage 3 water rates would include an additional monthly water usage fee of $50.00, or other such fee as deemed necessary.

APPENDIX B
PUBLIC EDUCATION MATERIALS

There are several publications available for use at U.S. EPA website for general distribution (currently located at http://epa.gov/watersense/pubs/index.htm#ideas). These publications include such topics as:

- Simple Steps to Save Water,
- Ideas for Residences,
- Ideas for Commercial,
- Using Water Wisely In the Home,
- Outdoor Water Use in the US,
- Toilet Flush Facts,
- Watering Can Be Efficient,
- Irrigation Timers for the Homeowner, and
- Water Efficient Landscaping,

These publications can be utilized until the Tolas Mobile Home Park develops system-specific publications.

There are also numerous website that provide tips for conserving water. One of these is: http://www.wateruseitwisely.com/100-ways-to-conserve/index.php. Customers can be directed to this website for tips to conserve water.

Specific tips for landscaping that can be provided to the customers are listed below. During drought conditions outdoor watering restrictions may be imposed, and therefore some of the following tips will not apply.

Tips for Landscaping

Watering:

- Detect and repair all leaks in irrigation systems.
- Use properly treated wastewater for irrigation where available.
- Water the lawn or garden during the coolest part of the day (early morning is best). Do not water on windy days.
- Water trees and shrubs, which have deep root systems, longer and less frequently than shallow-rooted plants which require smaller amounts of water more often. Check with the local nursery for advice on the amount and frequency of watering needed in your area.
- Set sprinklers to water the lawn or garden only—not the street or sidewalk.
- Use soaker hoses and trickle irrigation systems.
- Install moisture sensors on sprinkler systems.

Planting:

- Have your soil tested for nutrient content and add organic matter if needed. Good soil absorbs and retains water better.
- Minimize turf areas and use native grasses.
- Use native plants in your landscape—they require less care and water than ornamental varieties.
- Add compost or peat moss to soil to improve its water-holding capacity.

Maintaining:

- Use mulch around shrubs and garden plants to reduce evaporation from the soil surface and cut down on weed growth.
- Remove thatch and aerate turf to encourage movement of water to the root zone.
- Raise your lawn mower cutting height to cut grass no shorter than three inches—longer grass blades encourages deeper roots, help shade soil, cut down on evaporation, and inhibit weed growth.
- Minimize or eliminate fertilizing which requires additional watering, and promotes new growth which will also need additional watering.

Ornamental Water Features:

- Do not install or use ornamental water features unless they recycle the water. Use signs to indicate that water is recycled. Do not operate during a drought.

APPENDIX C
END-USER WATER SAVINGS

Here are just a few of the end-user water savings that could be realized:

Leaky Faucets

Issue: Leaky faucets that drip at the rate of one drip per second can waste more than 3,000 gallons of water each year.

Fix: If you're unsure whether you have a leak, read your water meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same, you probably have a leak.

Leaky Toilets

Issue: A leaky toilet can waste about 200 gallons of water every day.

Fix: To tell if your toilet has a leak, place a drop of food coloring in the tank; if the color shows in the bowl without flushing, you have a leak.

Showering

Issue: A full bath tub requires about 70 gallons of water, while taking a five-minute shower uses 10 to 25 gallons.

Fix: If you take a bath, stopper the drain immediately and adjust the temperature as you fill the tub.

Brushing Teeth Wisely

Issue: The average bathroom faucet flows at a rate of two gallons per minute.

Fix: Turning off the tap while brushing your teeth in the morning and at bedtime can save up to 8 gallons of water per day, which equals 240 gallons a month!

Watering Wisely

Issue: The typical single-family suburban household uses at least 30 percent of their water outdoors for irrigation. Some experts estimate that more than 50 percent of landscape water use goes to waste due to evaporation or runoff caused by overwatering.

Fix: Drip irrigation systems use between 20 to 50 percent less water than conventional in-ground sprinkler systems. They are also much more efficient than conventional sprinklers because no water is lost to wind, runoff, and evaporation. If the in-ground system uses 100,000 gallons annually, you could potentially save more than 200,000 gallons over the lifetime of a drip irrigation system should you choose to install it. That adds up to savings of at least $1,150!

Washing Wisely

Issue: The average washing machine uses about 41 gallons of water per load.
Fix: High-efficiency washing machines use less than 28 gallons of water per load. To achieve even greater savings, wash only full loads of laundry or use the appropriate load size selection on the washing machine.

Flushing Wisely

Issue: If your toilet is from 1992 or earlier, you probably have an inefficient model that uses at least 3.5 gallons per flush.
Fix: New and improved high-efficiency models use less than 1.3 gallons per flush—that's at least 60 percent less than their older, less efficient counterparts. Compared to a 3.5 gallons per flush toilet, a WaterSense labeled toilet could save a family of four more than $90 annually on their water bill, and $2,000 over the lifetime of the toilet.

Dish Washing Wisely

Issue: Running dishwasher partial full and pre-rinsing dishes before loading the dishwasher.
Fix: Run the dishwasher only when it's full and use the rinse-and-hold dishwasher feature until you're reading to run a full load. Pre-rinsing dishes does not improve cleaning and skipping this step can save you as much as 20 gallons per load, or 6,500 gallons per year. New water-saver dishwashers use only about 4 gallons per wash.

Estimated water savings from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-1):

Type	Estimated Usage (gpcpd)	Conservation Usage (gpcpd)	Savings (gpcpd)	Savings (%)
Toilet	18.3	10.4	7.9	43 %
Clothes Washers	14.9	10.5	4.4	30 %
Showers	12.2	10.0	2.2	18 %
Faucets	10.3	10.0	.3	3 %
Leaks	6.6	1.5	5.1	77 %

Benchmarks from selected conservation measures from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-4):

Category	Measure	Reduction of End Use (% or gpcpd)
Universal metering	Connection metering	20 %
	Sub metering	20 – 40 %
Costing and pricing	10% increase in residential prices	2 – 4 %
	10% increase in non-residential prices	5 – 8 %
	Increasing-block rate	5 %
Information and education	Public education and behavior changes	2 – 5 %
End-use audits	General industrial water conservation	10 – 20 %
	Outdoor residential use	5 – 10 %
	Large landscape water audit	10 – 20 %
Retrofits	Toilet tank displacement devices (for toilets using > 3.5 gallons/flush)	2 – 3 gpcpd
	Toilet retrofit	8 – 14 gpcpd
	Showerhead retrofit (aerator)	4 gpcpd
	Faucet retrofit (aerator)	5 gpcpd
	Fixture leak repair	0.5 gpcpd
	Governmental building (indoors)	5 %
Pressure management	Pressure reduction, system	3 – 6 % of total production
	Pressure-reducing valves, residential	5 – 30%
Outdoor water use efficiency	Low water-use plants	7.5 %
	Lawn watering guides	15 – 20 %
	Large landscape management	10 – 25%
	Irrigation timer	10 gpcpd
Replacements and promotions	Toilet replacement, residential	16 – 20 gpcpd
	Toilet replacement, commercial	16 – 20 gpcpd
	Showerhead replacement	8.1 gpcpd
	Faucet replacement	6.4 gpcpd
	Clothes washers, residential	4 – 12 gpcpd
	Dishwashers, residential	1 gpcpd
	Hot water demand units	10 gpcpd
Water-use regulation	Landscape requirements for new developments	10 – 20 % in sector
	Greywater reuse, residential	20 – 30 gpcpd